

ICS

SERIAL NO:

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||=====||  
||          ||  
||      CP-1 / CBM-64      ||  
||          ||  
||      RTTY / CW / ASCII SOFTWARE      ||  
||          ||  
||=====||
```

USER MANUAL

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JANUARY 1984

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Warning

1. To avoid damage to the CP-1 or the computer, do NOT plug or unplug connections with power applied.
2. Be very careful in grounding. Several customers have damaged their CP-1s. If you choose to use a system ground, be sure to connect all parts to a COMMON GROUND. Do NOT connect your TV set chassis to this ground, as it is likely to be connected directly to one side of the power line. With an older TV, make sure the antenna leads are NOT HOT with line voltage with respect to your system ground.

Thank you,
Service Department
AEA, Inc.

This software package contains the software in EPROM on a PC board, this manual, keyboard overlays, and a connecting cable to connect the CP-1 and your Commodore 64 computer. The program will run on a minimum-sized Commodore 64. It can make use of cassette or disk I/O and you may wish to add that hardware - however it isn't needed to use most of the program.

You should locate, fill out and return the enclosed Software Support Agreement and record the support number off it on the similar page at the end of this manual.

This software allows you to send and receive Morse or RTTY (in ASCII or Baudot). It features type ahead buffering, multispeed operation, split screen, precompose operation, text editing, word wrap, a time of day clock, diddle, printer output, dump to or retrieve from cassette or disk, USOS, receive (QSO) buffer on-off, auto CR/LF, CW break-in operation, word or character mode on transmit, audio feedback from the keyboard, Morse code idle character, 10 message buffers all with adjustable sizes, Xmit buffer with adjustable size, dedicated function keys for quick operation, transmit and receive speed change capability with speed guess capability, Farnsworth Morse operation below 15 wpm, retransmission of received text without cassette or disk save, CW speed lock, transmission of files from cassette or disk, and the ability to imbed control functions in text to be transmitted.

IN CASE OF TROUBLE

Application and troubleshooting assistance may be had by calling AEA during our 8-12 and 1-4:30 working hours in Seattle, WA. and asking for the Service Department. Telephone 206-775-7373. Please have your software support number and the version number of your software ready. The first you have recorded on the Support Agreement at the end of your manual, the second is available from the screen after system boot. This manual is written for version 1.1.

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INSTALLATION

Make sure the power is off to the computer and the CP-1. Make sure the board edge contacts are clean. You may want to clean them with an eraser first. Avoid touching the contacts with your fingers or anything else that may static-discharge to them as the EPROM can be damaged. Install the program cartridge in the Commodore 64 Cartridge Slot on the right rear surface of the computer. Plug the board in with its component side facing up. Make sure the board is fully seated. Plug the cable into the User Port on the left end of the Commodore 64 and the other end into the TTL connector on the rear of the CP-1. MAKE SURE THE CABLE EXITS DOWNWARDS FROM THE TTL CONNECTOR. Connect the CP-1 to your radio as described in the CP-1 manual. (Note: you may wish to leave the PTT and AFSK output from the CP-1 disconnected while you familiarize yourself with the program's operation - in this fashion you won't go on the air with your practicing). Turn on the CP-1, your radio and the Commodore 64. Read the next section and proceed to the STARTING THE PROGRAM section.

THE PROGRAM

The AEASoft MBAText Communications Package sets up a communications system using the Commodore 64 computer. The communication modes offered are Morse Code, RTTY (Baudot), and ASCII.

The buffers used by the program are:

XMIT Buffer - The buffer that holds the characters to be transmitted. This buffer has a fixed size at all times, initially 256 characters, which can be changed in the Command Menu (see below). "XBF" stands for the number of characters free in the XMIT Buffer -- this decreases when characters are entered into the buffer and increases when they are transmitted. If you reach the limit, you simply will not be able to type anymore into the buffer until some has been transmitted, thereby making more room.

10 MESSAGE Buffers - These are 10 Soft Partitionedtm buffers that can hold information such as brag tapes, contest exchanges, or bulletins -- anything that might need to be transmitted several times. They can be loaded or saved on cassette or disk under the Command Menu.

QSO Buffer - This buffer holds all characters received and transmitted in the Morse, RTTY, or ASCII modes. Its length is variable, and the number of characters free is signified by "QBF". When QBF becomes 0, the earliest characters in the buffer are lost and the newest ones take their place. QSO recording is an option -- if no recording is desired then this buffer stays empty. The QSO Buffer can be edited, printed, and loaded or saved on cassette or disk.

STARTING THE PROGRAM

After all the cables and the circuit board have been installed, turn on the Commodore 64. It should say "READY". If you are using a color TV as the display, type this:

SYS 33330

followed by RETURN.

If you are using a monochrome monitor (CRT) as a display, type this:

SYS 33333

followed by RETURN.

Now the screen should show this:

00:00:00

MBA TEXT TM V1.1
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SELECT:

- M. MORSE
- A. ASCII
- R. RTTY
- C. COMMAND MENU
- O. OPTIONS
- B. BACK TO BASIC

You are given the choice of the 3 modes of operation (Morse code, 8-bit ASCII, or 5-bit Baudot RTTY), a command menu, an options menu, or return to the BASIC language of the Commodore 64.

To select one of the choices, press the key indicated: M, A, R, C, O, or CTRL-B. Each selection is discussed below. To get back to this menu, type "RUN/STOP".

BACK TO BASIC

The "B" in the Back to BASIC selection is in reverse video as a reminder that the CTRL key must be held down while you are pressing the "B" key. This is to ensure that you really mean to return to BASIC, which would destroy any information in the data buffers of the MBAText program.

OPTIONS MENU

The Options Menu looks like this:

U.	USOS	ON
M.	MORSE FILL (BT)	OFF
R.	RTTY SYNC (NUL)	OFF
A.	AUDIO FEEDBACK	OFF
C.	AUTO CR	ON
L.	AUTO LF	ON
W.	WRAP-AROUND	ON
B.	CW BREAK-IN	OFF
O.	OUTPUT MODE	CHAR

To change the state of an option, press the indicated key and the option will be displayed as opposite to what it was before the key was pressed. Press RUN/STOP to get back to the Main Menu.

U. UNSHIFT ON SPACE - USOS causes RTTY reception to go to the LETTERS mode after a space is received. At times a received LTRS character can be garbled or another character can be wrongly interpreted as a FIGS character, and many perfectly good characters received after this would be interpreted as being Figures rather than Letters. USOS helps reception in this case. However, some non-amateur services send groups of numbers separated by spaces, in which case USOS would not be helpful.

M. MORSE FILL (BT) - The Morse Code idle character is the double dash (BT sent as one character). If you are transmitting Morse and you cannot think of what to say next, this option will fill in the dead air with BTs.

R. RTTY SYNC (NUL) - The RTTY idle character is NULL. This option causes NULLS to be sent in the absence of characters being typed into the XMIT buffer.

A. AUDIO FEEDBACK - Makes a short beep noise on the TV speaker when a key is pressed. If you are using a video monitor without speaker, you will hear no tone.

C. AUTOMATIC CARRIAGE RETURN - When transmitting RTTY (Baudot) or ASCII characters, this option causes a carriage return to be sent at the first space after 65 characters, or after 71 characters. When the carriage return is sent, the character count starts at 0 again. This option should not be used if you are sending RTTY pictures, where you want everything sent exactly as typed.

L. AUTOMATIC LINE FEED - This option causes a Line Feed character to be sent after every Carriage Return. In Morse reception, this option causes the printer to receive a line feed after every carriage return. Turn this option off if your printer is double-spacing (like the VIC-1525 printer).

W. WRAP-AROUND - This option prevents words from breaking up on the display between lines. A new line is started if there is a space in the last 5 positions on a line.

B. CW BREAK-IN - For fast exchanges in Morse, the need to keep pressing the Transmit and Receive keys can be annoying. This option causes the program to go into Transmit mode as soon as a character is entered into the XMIT Buffer. Then you can type ahead as many characters as you wish, editing them if you have time. When the XMIT Buffer becomes empty (after everything has been transmitted), the program automatically goes back to Receive mode.

O. OUTPUT MODE - In CHAR mode each character will be transmitted as it is encountered in the XMIT Buffer. In WORD mode the program will wait at the beginning of a word. When a space or other delimiter is typed, the word is transmitted. This gives you the opportunity to correct your spelling or change the word before it is transmitted (even though the transmit buffer has been emptied).

COMMAND MENU

The Command Menu looks like this:

- L. LOAD
- E. EDIT
- 9. MOVE QSO TO MSG 9
- S. SAVE
- X. SET XMIT BUFF SIZE
- T. SET TIME

Again, press the indicated key for the desired function.

L. LOAD

This command loads data from cassette or disk to the message buffers or the QSO buffer. First you will be asked to choose:

Q. QSO BUFFER

M. MESSAGE BUFFERS

If "M" is typed then all 10 message buffers will be loaded from disk or cassette at once. In any case, the previous contents of the chosen buffer will be written over.

Next you will be asked to "ENTER FILE NAME". For cassette files, the name should always start with "C: "; for disk files, "D: ". For example, the file named BULLETIN on cassette would be entered as "C:BULLETIN" followed by a RETURN. You will be asked to "PRESS PLAY ON TAPE", then you will see "SEARCHING FOR BULLETIN" and then "FOUND BULLETIN". Then the Command Menu will be displayed again. Press RUN/STOP to get back to the Main Menu.

NOTE: The Commodore 64 has several steps in the cassette operation in which it waits for you to press the Commodore key before it

continues. When you see the Commands Menu appear on the screen again, the operation is finished.

E. EDIT

This command gives you the ability to read and fix up characters in the message buffers or the QSO Buffer. It is also used when initially entering data into the message buffers. You will first be asked which buffer to edit:

Q. QSO BUFFER

- 0. MSG 0
- 1. MSG 1
- 2. MSG 2
- 3. MSG 3
- 4. MSG 4
- 5. MSG 5
- 6. MSG 6
- 7. MSG 7
- 8. MSG 8
- 9. MSG 9

Pick one. Editing one buffer leaves all the others unaffected. What you see next is a line at the top of the screen showing which buffer you are editing, the current QSO Buffer space available, and the time, followed by the text already in the selected buffer, if any. Any characters you add or delete will affect the QBF. The current cursor is shown by the blinking character, and the end of the buffer is shown by a distinctive character. The beginning of the buffer will be the first character displayed, while the end of the buffer may or may not be visible on the screen, depending on the buffer size. Any characters typed after the end of the buffer will be tacked onto the end. Here are some other ways to control editing:

Cursor keys - You can go up, down, left or right, one character at a time without affecting the characters the cursor passes over. The cursor keys repeat as they are held down. As you reach the top or bottom of the display, the text will scroll up or down as appropriate.

HOME - Brings cursor to the first character in the buffer.

CLR - Clears all characters from the cursor to the end of the buffer. The End-of-Buffer marker is now under the cursor.

DEL - Deletes the character (blinking) under the cursor.

INST - Toggles INSERT mode. The letters "INS" turn on and off in the top line of the display. If "INS" is displayed, then the next character typed will appear under the cursor, and the cursor

character and all following characters move one position to the right.

Lower Case - In ASCII, lower case letters may be desired. Holding down SHIFT while pressing the Commodore key toggles the editor between upper and lower case.

RUN/STOP - Stores the edited buffer and gets you back to the Command Menu.

9. MOVE QSO BUFFER TO MESSAGE 9

This command enables you to re-transmit anything you may have copied into the QSO Buffer. The contents of the QSO Buffer are moved to Message 9, destroying any previous contents of Message 9, and clearing the QSO Buffer. The text can now be transmitted by typing CTRL-9 into the XMIT Buffer in the Morse, RTTY, or ASCII modes. One use for this would be re-transmitting bulletins or message traffic. The text can be edited either before or after the MOVE, using the EDIT command. Editing is necessary for any characters displayed in reverse video; for example, Carriage Return (reverse "M") could be deleted, or a Morse End of Transmission (reverse "AR") would have to be changed into a "*".

The "9" command cannot be used to clear Message 9 by moving an empty QSO buffer to Message 9. The only way to clear it is to Edit Message 9 and use the CLEAR key.

S. SAVE

The contents of the QSO Buffer or the 10 Message Buffers can be saved on cassette or disk. In addition, the QSO Buffer can be printed with this command.

You will be asked to save either "Q" or "M" as in the Load command. Then you will be asked for a file name, again as in the Load command. If you are saving the QSO Buffer, you can type "P:" instead of a file name to send the contents of the QSO Buffer to the printer. When saving on cassette, write down the tape location reading for easy access some other time.

NOTE: When saving to cassette, the Commodore 64 waits for you to press the Commodore key before going on at several points. The Commands Menu appears on the screen again when the Save process is finished.

Pressing "RUN/STOP" at any time will stop the save command and return you to the Command Menu.

X. SET XMIT BUFFER SIZE

This command changes the size of the XMIT (Transmit) Buffer from the initial setting of 256 characters. Type in the size you want

followed by a RETURN. If the size required would destroy some of the Message Buffers or the QSO Buffer, you will get only the largest safe amount of storage. If you want more than this, you should edit or clear some of the buffers to make room.

T. SET TIME

Type in 6 digits that reflect the 24-hour time you want.

OPERATION ON THE AIR

RECEIVE MODE

When first entering one of the communication modes, the upper part of the screen becomes a status panel. The 3 modes (Morse, RTTY, and ASCII) are similar in their displays, so the example shown will be Morse:

```
MORSE          00:00:00
XMIT SP  20  XBF      256
RCVE SP  20  QBF    30453
-----
```

The mode, Morse, is shown in the upper left-hand corner, and the time is at the right. The Transmit speed is shown as 20 wpm, as is the Receive speed. XMIT Buffer space free is 256 characters and QSO Buffer space free is 30453. The characters "RCVE" are in reverse video to show that we are in Receive Mode.

TRANSMIT MODE

In Transmit Mode the characters "XMIT" are now in reverse video and "RCVE" is displayed normally. In addition, lines have appeared on the screen, dividing it into 3 areas.

The top area shows 13 lines of Received characters as they appear in the QSO Buffer. Transmitted characters, although stored in the QSO Buffer, are not shown here.

The middle area consists of a single line that shows the 40 most recent characters that have been transmitted.

The bottom area consists of 5 lines of text showing the most recent characters entered into the XMIT Buffer. As more characters are typed into the buffer, the 5-line display will scroll up a line at a time. "XBF" will decrease with every character that is typed, and will increase with every character that is transmitted.

FUNCTION KEY DEFINITIONS

The on-the-air operation is controlled by the keys marked "f1" through "f8" on the right side of the Commodore 64 keyboard. Keys f1, f3, f5, and f7 are pressed normally, while f2, f4, f6, and f8 are operated by holding down SHIFT while pressing the intended

key. CTRL-f1 and CTRL-f3 mean hold down the CTRL key while pressing the function key.

f1 (Receive) - Gets the program into Receive mode. Every time this is pressed a Carriage Return and a Line Feed character goes into the QSO Buffer and the printer if either is enabled. Text can be typed into the XMIT Buffer while receiving, but it will not be sent until the Transmit key is pressed.

f2 (Clear QSO Buffer) - Empties out the QSO Buffer, returning it to its empty QBF setting.

f3 (Transmit) - Puts the program into Transmit mode. Transmits text previously entered into the XMIT Buffer.

f4 (Clear XMIT Buffer) - Empties out the XMIT Buffer, returning it to its empty XBF setting.

f5 (Change speed) - In Morse mode, you will be asked to "ENTER 2 DIGITS". This becomes the new Transmit speed, and is shown in the Status Panel. The minimum speed is 5 wpm. For speeds from 5 to 14 wpm, the code is sent with Farnsworth spacing -- that is, the characters are sent at 15 wpm while the spaces between characters are lengthened to yield an overall rate of 5-14 wpm.

In RTTY mode, pressing this key cycles through all speed options: 60, 67, 75, 100, or 132 wpm. Whichever one you stop on becomes the new Transmit and Receive speed. In ASCII mode, this key toggles between 110 and 300 baud speeds.

f6 (Invert) - This key reverses Mark and Space during RTTY/ASCII reception. When Invert is active the letter "I" appears in the first line of the Status Panel. RTTY/ASCII transmission is not affected.

f7 (Speed Lock/Guess) - In Morse mode, this key locks the received speed. The letter "L" appears after the Receive Speed in the Status Panel. Reception of Morse Code in the presence of noise can be enhanced this way. To unlock the speed, press f7 again.

In RTTY/ASCII mode, it is often difficult to tell the speed of a station we hear. Pressing this key causes the program to take a guess at the speed. The estimate will appear in the "RCVE SP" portion of the Status Panel in words per minute for RTTY, and in baud for ASCII. One way to use this key is to hold it down, allowing it to repeat; then watch the estimates and note the value that most of the estimates seem to be near. Note that characters are not received properly. This is because the program is concentrating all its attention on the speed estimate. The transmit speed is not affected by the estimate, and should be changed if necessary using the f5 key.

f8 (Toggle Printer) - This key toggles the printer on and off. When on, the printer prints characters as they are stored in the QSO Buffer. The letter "P" appears on the first line of the

Status Panel. The QSO buffer must be recording characters in order for this feature to operate (see below).

CTRL-f1 (Toggle Recording) - This key toggles the QSO Buffer recording mode. Recording is normally off. When this key is pressed, the Status Panel shows a "*" next to the QBF display ("*QBF") to signify that the QSO Buffer is recording. Pressing CTRL-f1 again turns off recording and makes the "*" go away.

NOTE: Be careful to record only what you really need. It is possible to record more than 30,000 characters, and the commands in the Edit Mode respond more slowly the more characters have been recorded. You may want to set the XMIT buffer size to much more than 256 (say 25,000) to keep the QSO Buffer from getting bogged down with too many characters to edit quickly.

CTRL-f3 (Break-in Buffer) - Pressing this key puts you in Transmit mode with a 95-character break-in buffer. This bypasses the XMIT Buffer for short immediate or break-in transmissions. The contents of the other buffers in the system are not affected.

CONTROL COMMANDS

By holding the CTRL key down while pressing certain keys, commands can be imbedded in the XMIT Buffer:

CTRL-(0-9) - Transmit a message port. This can be either the contents of the message port alone or in the middle of text in the XMIT Buffer. A contest on CW might be handled by using the CW Break-In option and storing contest exchanges in the message ports.

CTRL-E - Return to Receive mode. This saves you the trouble of pressing f1 at the end of your transmission.

CTRL-F - Transmit a file from cassette or disk. This sign should be used both immediately before and after a file name. For example, a disk file named TRAFFIC would be imbedded in the transmitted data as follows:

text (CTRL-F) D:TRAFFIC(CTRL-F) more text.

CTRL-T - Time. The current hours and minutes as shown in the Status Panel are sent as 4 digits, without colons.

CTRL-M - Carriage Return. Same as RETURN.

CTRL-J - Line Feed.

SPECIAL MORSE CHARACTERS

Key	Abbreviation	Meaning
+	SK	End of QSO
@	AS	Wait
*	AR	End of message
Uparrow	KN	Go only
=	BT	Break or pause
Poundsign	AA	New line
!	SN	Understand
%	KA	Attention

NOTE

THIS IS THE EUROPEAN (IARU) TONES VERSION.

MARK: 1445 Hz

SPACE: 1275 Hz

WHEN USED WITH AN SSB TRANSCEIVER OR RECEIVER, SET TO
UPPER SIDEBAND.

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MBA-TOR SOFTWARE FOR THE CP-1

This is probably the most sophisticated amateur communications software ever to be offered for the Commodore 64.

The package contains the software in E-PROM on a P.C. board, a manual, keyboard overlays, and a connecting cable to connect the CP-1 and your Commodore 64 computer. The program can make use of cassette or disk I/O and you may wish to add that hardware - however, it isn't needed to use most of the program.

The software allows you to send and receive Morse code, RTTY (in ASCII or Baudot) and AMTOR. It features type-ahead buffering, multi-speed operation, split screen, pre-compose operation, text editing, word wrap, a time of day clock, ditle, printer output, dump to or retrieve from cassette or disk, USOS (RTTY unshift on space), receive (QSO) buffer on-off, auto CR/LF, CW break-in operation, word or character mode on transmit, audio feedback from the keyboard, Morse code idle character, 10 message buffers all with adjustable sizes, XMIT buffer with adjustable size, dedicated function keys for quick operation, transmit and receive speed change capability with speed guess capability, Farnsworth Morse operation below 15 w.p.m. re-transmission of received text without cassette or disk slave, CW speed lock, transmission of files from cassette or disk, two types of mail-drop operation, and the ability to imbed control functions in text to be transmitted.

Price: £69.00 inc VAT

P & P: £1.50

- - - - -
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Callers by
Appointment only

ICS

CP-1 / CBM-64 Program

USER PORT CONNECTIONS

GROUND	(Screen of Cables)	A, 1, 12, N
PTT	(Active low)	E
RTTY output	(Space low)	F
CW output	(Active low)	H
Demod input	(Space low)	J

All data lines should be individually screened.

Not more than one standard TTL lead should be connected to each output.

CP-1/CBM-64 Software

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Ser No: 028

CP-1/CBM 64
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